FOREWORD

Conservation has been defined as "The Wise Use of Natural Resources". Since Natural Resources are not easily replaced it is necessary that wise use be made of them. If not, we may realize some day, not too far off, that our natural resources are gone. Then it will be too late to do anything about the matter.

The purpose of this booklet is to arouse the teachers to this fact and to provide them with some information relative to the various phases of conservation. It is the desire of the writer that this information will be given to the pupils to arouse them to our needs.

The writer desires to give much credit to the work of the Department of Conservation of the State of Illinois for what it is doing in the matter of educating the public to the present and future problems.

J. Wesley Neville
County Superintendent of Schools

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CONSERVATION FOR PERRY COUNTY SCHOOLS

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CHAPTER I

State Department of Conservation and Other Agencies

The old saying "What is everybody's business is nobody's business" holds true in the matter of conservation. If there were no national, state, and county organizations interested in conservation, we would have little of it done. Also these agencies spread information relative to conservation in order that the people may know the latest facts about the matter.

Chief among these agencies is the Department of Conservation of the State of Illinois. Mr. Livingston Ozborne is director of this department, with headquarters in the Capitol Building at Springfield. Governor Dwight H. Green is over the director. There are several divisions of this department each with its head. These are: Game Management Division, Joe Davidson, Sup't; Education Division, Claude Graeff, Supervisor; Game Division, Lewis E. Martin; Forestry Division, E. E. Nuuttila, State Forester; Fish Division, Sam A. Parr, Sup't. Public Relations, Milford M. Pittman, Supervisor; Accounting Division, Charles J. Nelson, Chief Clerk; and Inspection Division, Robert C. Sparks, Chief Inspector.

Each one of these divisions has its particular work to do but the entire department is co-ordinated and works together as a unit. The work of some of these divisions will be discussed in later chapters.

All life depends upon natural resources. Since this is true all people should be interested in the preservation of natural resources The Department of Conservation is not only interested in the preservation but also in the replenishing and rebuilding of our natural resources. Some of these, as coal, oil and natural gas cannot be replenished. But our fish, game, fur-bearing animals, and forests can be replenished.

This department must have funds to carry on its work as over two hundred people, in addition to office help in Springfield, are employed. The funds to carry on the work of the department come from the sale of hunting, fishing and trapping licenses, commercial permits and fines for violation of the fish and game code. No revenue comes from regular tax sources and all the divisions except forestry are self supporting.

The department owns seven fish hatcheries, four game farms, five forests and nurseries, a training school, and several public hunting, fishing, and recreation areas. All of these comprise a total of 26,119 acres. These were purchased from funds of the department at various times.

The Division of Public Relations is under the leadership of Milford M. Pittman. This division edits a magazine called "Illinois Conservation" published bi-monthly. It is the official publication of the Department of Conservation. Another phase of the work of this division is that of holding meetings throughout the State. These are before sportsmen, Nimrod Clubs and Civic Clubs. Various movies of the work of the divisions of the department are shown and discussed. Information is disseminated to newspapers and magazines. In addition, this division has an exhibit at the State Fair and at most of the local fairs throughout the state, showing what is being done in the way of conservation in the State of Illinois.

Division of Education: This division is under the leadership of Claude Graeff. He is better known as "Sunshine". He is an ardent sportsman and fisherman as well as an educator. In 1942 the department bought a 27 acre estate on Fox Lake in Lake County. This property was purchased for $50,000.00 but it is easily worth three times that now. Mr. Vern Blust is in charge of the property. The place must be seen to be appreciated.

Each year the Conservation Department conducts two schools of two weeks each for the boys and girls of this State. Each County may send one representative to this school each year. The boys and girls are given a good time. There is fishing and boating and recreational games provided for all. In addition they attend classes and learn about conservation of all our natural resources, especially those which can be increased. It is expected that they will organize Junior Conservation groups in their own counties.

Also a training school for teachers of science is held each year. One teacher from each county may be appointed by the County Superintendent of Schools. They receive instruction in all phases of conservation, so they in turn can make use of the information in their own classes.

The departments hold training schools here for its own officers, providing refresher courses for those who have been in the service for several years. In addition the property is used for meetings of Isaac Walten League, for meetings of Women's Clubs and other meetings. All are taught conservation.

OTHER AGENCIES

Some of the other agencies interested in conservation in Illinois are: U. S. Fish and Wild Life Service; U. S. Forestry Service; Illinois Natural History Survey; U. S. Soil Conservation Service; U. S. Department of Agriculture, University of Illinois, Department of Public Work and Building, Department of Registration and Education, and the various county soil conservation districts, including Perry County. The State Geological Survey and the Natural Histroy Survey are both under the Department of Registration and Education.

The work of each one of these agencies will be discussed under the particular chapters. The work of each supplements the work of the rest.

CHAPTER II

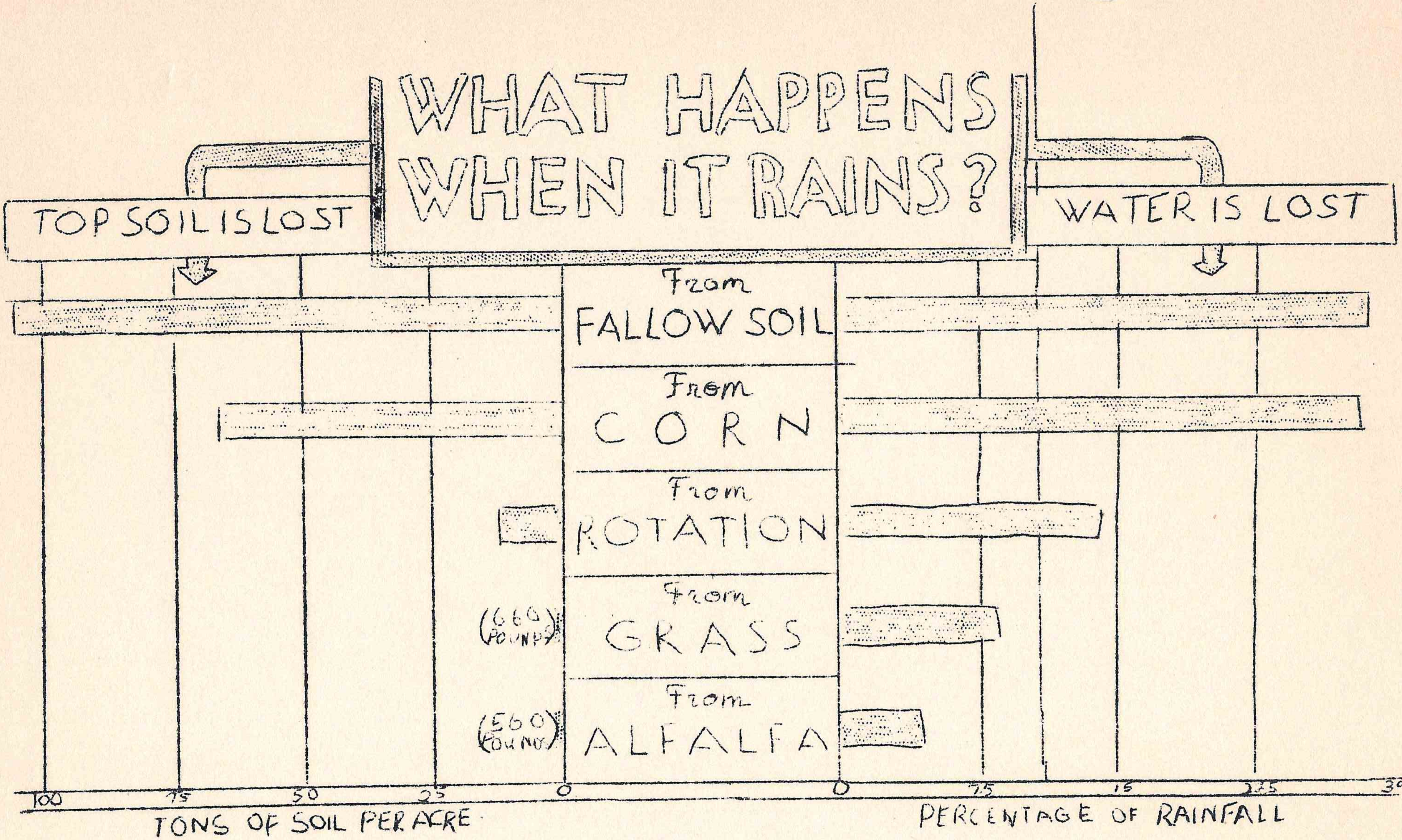
Conservation of Soil

Many millions of years ago the present State of Illinois was far different from what it is at the present time. The climate was warm continuously. Heavy rains fell. Ferns grew as tall as trees. It was truly a tropical jungle. These ferns and grasses fell into the swampy areas. In time various changes were brought about. This organic matter, by the combination of heat and great pressure, changed into coal and oil. Later changes in climatic conditions brought on the great glacial ice sheets. These glaciers consisted of huge masses of ice, often more than a mile in thickness, moving southward. They ground up the rock over which they traveled. They deposited soil on the way, leveling off the area. Illinois was visited by four great ice sheets. But there are three areas in Illinois not touched by glaciers. One is Jo Daviess County, another is in Calhoun County, and the third area is that part of the state south of Carbondale.

After the glaciers stopped, glacial streams carried quantities of ground rock below and formed flood plains. When this dried it was picked up by winds and carried for miles. This is called loess and formed the basis of our soil.

Then plant and animal life developed. Gradually the soil developed a large amount of organic material. But this took a long, long time. The soil in Illinois, that part known as the "Top" soil is only about 12-14 inches deep. It is this part which has been wasted and must be conserved.

Soil must contain various kinds of chemical elements if plants are to be grown. These include oxygen, hydrogen, carbon, magnesium, nitrogen, phosphorus, calcium, sulfur, iron potassuim, copper, zinc, and others. Carbon, oxygen and hydrogen are unlimited. The others are not so abundant and the plants suffer.


WHAT HAPPENS WHEN IT RAINS?
TOP SOIL IS LOST
WATER IS LOST
From FALLOW SOIL
From CORN
From ROTATION
From GRASS
From ALFALFA
(660 POUNDS)
(560 POUNDS)
100
75
50
25
0
0
7.5
15
22.5
30
TONS OF SOIL PER ACRE
PERCENTAGE OF RAINFALL

Soils vary as to their make up and workability. Some are sandy; some are clays; some are loamy. Others are peats and mucks. The type of soil determines to a great extent the crops that can be grown and the amount of water it can contain. The slope of the soil also determines to a certain extent the crops grown. Cultivated crops require a fairly level loamy soil to prevent great loss from water run off.

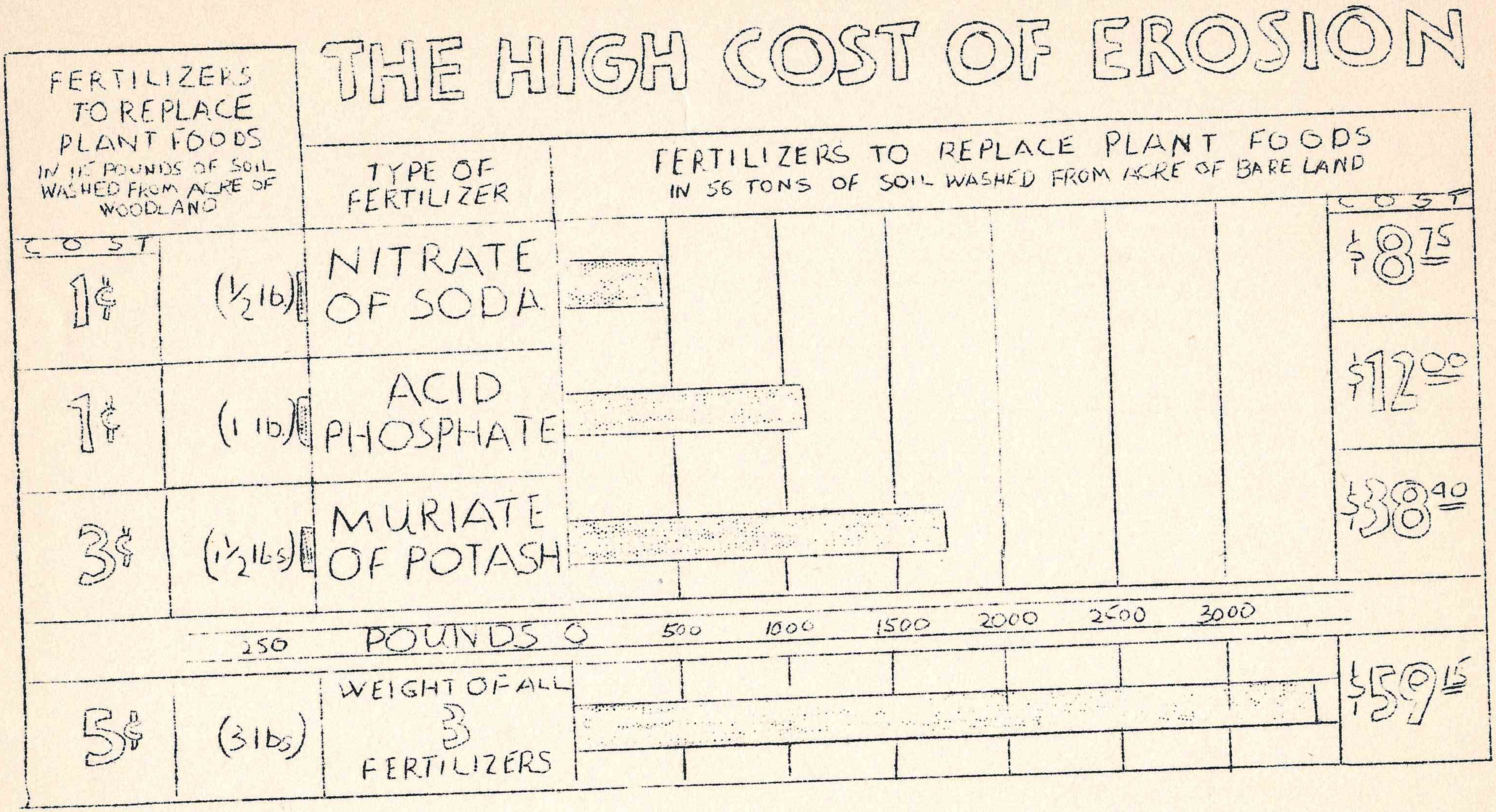
In Southern Illinois, including Perry County, we find the soils have lost much of their chemical contents through leaching. As a result it is necessary to supply through fetilizers, potash, and calcium. Since the glaciers did not reach much of the area, it is more rugged, and vast areas should not be cultivated. The cut-over area has created problems of conservation.

SOIL EROSION

Erosion refers to loss of soil through the action of wind or water. When the top soil is washed away, the lower layers do not have the ability to produce crops. History has recorded the fact that the prosperity of a people depends on the productivity of its soil. History also has left us a record of a flourishing race of people who lived in an area now desolate. An example of this is the northern part of Africa, once inhabited by the people of Carthage. The region is Asia between the Tigris and Euphrates was called the "Fertile Crescent". Some people believe that the garden of Eden was contained in its midst. The land was rich, the people wealthy, the cities were flourishing. Today these cities lie buried beneath the sands of the deserts. The forests were cut, the grasses closely grazed, the soil eroded. What has happened in other areas is happening in the U. S. today.

The wealth of this nation is rooted in the soil. Thirty million people in the U. S. earn their living directly from farming and ranching.

THE HIGH COST OF EROSION



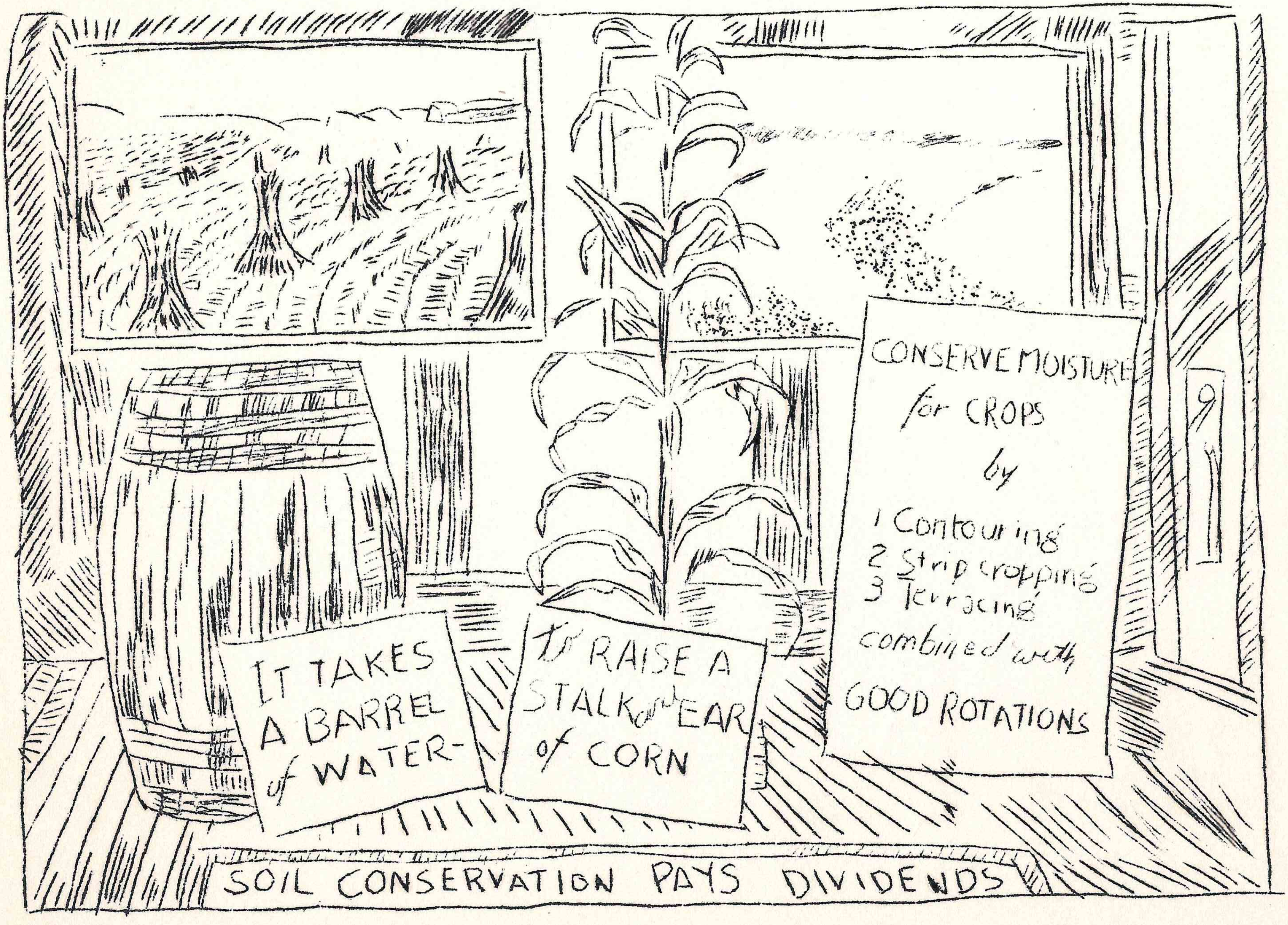
The rest, about one hundred ten million, depend upon the soil for most of their food, much of their clothing, and a large part of their other necessities.

If our soil is allowed to be washed away, down the rivers to the sea, our ability to produce crops will be gone. When our forefathers came to America, they found a wealthy land. Timbers were burned to destroy them in order to provide farm land. This land was used carelessly. When it no longer produced good crops, the pioneer moved on to more fertile fields.

Today there is no new frontier. Not only that, but the population is steadily increasing, demanding a greater supply of food and other products coming from the raw materials of the farm.

This has caused much land to be exposed to the weather and erosion. It is stated that half of the land area of the U. S. is being attacked by soil erosion. Already nearly 300,000,000 acres of once good agricultural land has been seriously damaged, much of it completely ruined. On the remaining 750,000,000 acres of land being used for farming or grazing, erosion is increasing.

Dr. H. H. Bennett, chief of the U. S. soil conservation service has said, "Unless erosion is effectively and promptly halted, the U. S. may be face to face with a serious land shortage." Since America was first settled, the average depth to our top soil has been reduced by wind and water erosion from nine to six inches. That is one-third and the best one-third. It is stated on good authority that soil erosion costs the United States more than $3,800,000,000 a year. Everyone in the United States is helping to pay for this loss. Can we continue to afford this loss?


IT TAKES A BARREL of WATER-
to RAISE A STALK and EAR of CORN
CONSERVE MOISTURE for CROPS by
1 Contouring
2 Strip cropping
3 Terracing
combined with GOOD ROTATIONS
SOIL CONSERVATION PAYS DIVIDENDS

WIND EROSION is not as serious in Illinois or Perry County as farther westward in the so-called "Dust Bowl". However, we find in certain parts of the state that land is often moved by the wind. Such land should never be plowed but kept in grass or trees to protect it.

LEACHING of soil is the removal of soluble materials by water as it goes through the soil. This reduces the amount of available plant food for crops, especially nitrates. This loss can be decreased if there are cover crops during the fall and winter.

WATER EROSION is the one that does most of our soil erosion. There are two principal kinds of water erosion. These are sheet erosion and gulley erosion.

SHEET EROSION is rather deadly, especially in the fact that it works unobserved to the casual farmer or land owner. It takes place gradually. In it we find a thin sheet of soil is moved off after a rain. There are no gullies to be seen. But in the ditch or lowland at the foot of the gradual slope, the land is deposited, often covering the small corn or beans growing there. It may be carried off in a stream to a point farther away. This leaves the subsoil exposed and poor crops will grow on them. Sheet erosion is increasing in Illinois and must be stopped. The University of Illinois, through its research department, announced that on a 2% slope (hardly any slope at all) soil loss per bushel of corn equalled eighty-six pounds. This equalled 1 inch of topsoil in 35 years. At this rate our soil would be gone in 9 times 35 years or 315 years.

GULLEY EROSION is even worse than sheet erosion but it is more easily recognized and measures taken to prevent it. In gulley erosion we find the water is concentrated in little rivulets which carry it down the slope. On the way they wash both sides and the bottom of their little channel, carrying the soil with them. These grow wider and deeper with each rain unless they are stopped.

When farmers plant their corn or beans or wheat up and down the slopes, even though it is a gentle slope, the first big rain will follow the drill tracks and begin gullies. Gullies have been started in orchards by water following the tracks of a spray rig. In forests gullies have been started by water following the tracks of a logging wagon made when the ground was full of moisture.

After a gully is formed to the extent that there is a small overfall, it grows more rapidly because the falling water undermines the loose subsoil, and the surface soil, being unsupported, falls into the gully and is washed away. In many areas of the older states of the East and South, vast areas have been abandoned because the erosion has made gullies which cannot be crossed. Vast fields are series of gullies.

The Bad lands of the Dakotas and the Grand Canyon of the Colorado are huge examples of the effects of gullies. Even though Illinois is classed as a Prairie State and is fairly level, much land, especially in the Southern part, are devastated with gullies. Jackson and Union Counties have many examples. In Perry County can be found fields with a gully large enough to bury a five room house.

Gullies cause various losses and inconveniences. In the first place the soil is lost, never to be replaced. This exposes other soil to the effects of erosion. In the second place the farmer is inconvenienced because a gully divides a field into two parts, each of which must be farmed separately. Again, while crossing smaller gullies, farm machinery is often damaged. Also the subsoil contains coarse gravel which is deposited on the topsoil at the base of the gully. This covers the good soil and prevents its use for crops.

METHODS OF CONTROL

The first thing a farmer wants to know when he realizes that th the fertile land of his fields are washing away is: What can I do about it?

It isn't too late to do something about your own farm. Cover crops, Contour Plowing and Planting, Permanent Pastures, Woodlands, Grass Waterways, Strip Croping, terraces, and dams are the terms expressing various places of soil conservation.

Much land in Perry County and the State of Illinois should never have been cleared. It should have been left in woods or pasture land. In this state the soil would not have eroded. More will be said about this in the chapter on forests.

Crop rotation is a good practice that has been known for many years. Most farmers rely upon certain crops as cash crops. In one locality it is corn; in another, it is wheat; in another, it is cotton; in another, it is beans; etc. But one crop cannot be grown repeatedly on the same field without serious damage to the field. The crop removes certain plant food and organic matter from the soil. This gradually exhausts the soil and makes it a fit subject for erosion. The loss of organic matter makes the soil less able to hold water and causes it to run off, taking the soil with it.

But rotation of crops keeps the soil in good physical condition. It improves fertility by adding organic matter. This retards soil erosion. A good crop rotation will include legumes, like alfalfa or clover in a rotation with wheat and corn. The plowing under of a green crop like clover will add much organic matter and fertility to the soil.

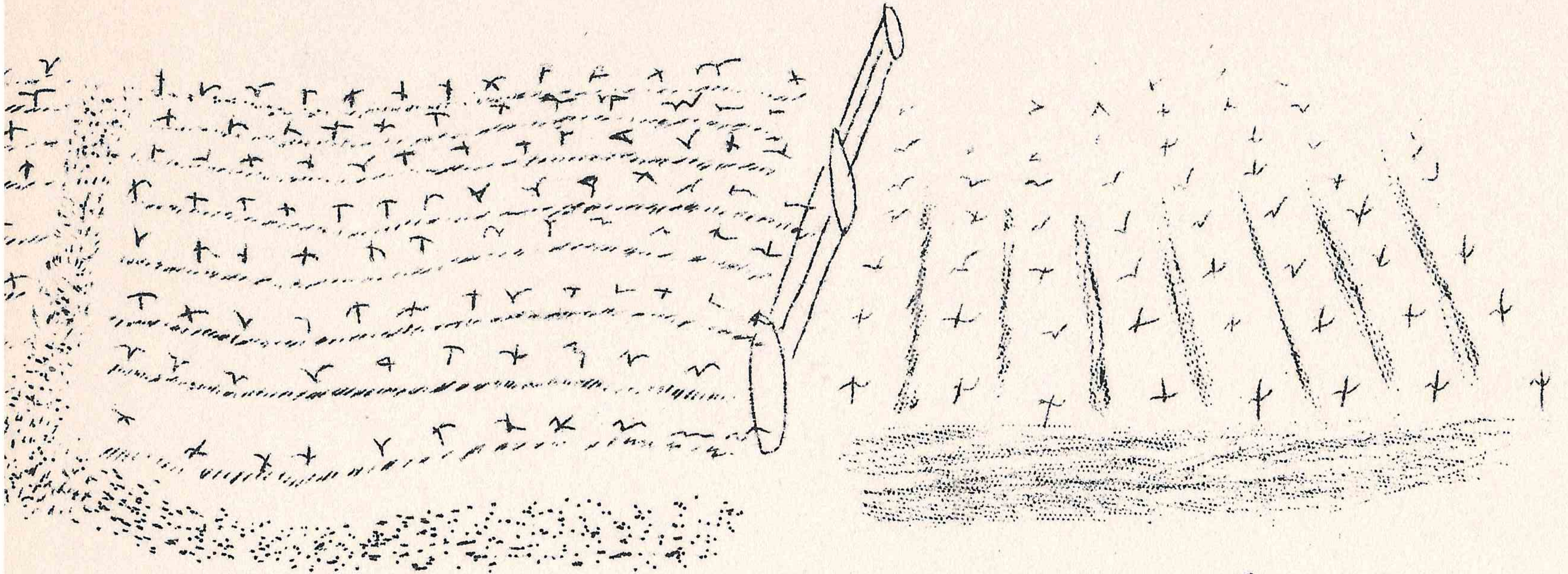
Strip farming goes along with crop rotation. It is farming with different crops in strips. In this way the water that flows out of one strip, as for example corn, is slowed when it strikes the next field, wheat or hay. In this way the run-off water does not gain enough speed to do much washing and soil erosion. The faster water moves down a slope, the more it washes. There is very little strip cropping in Perry County.

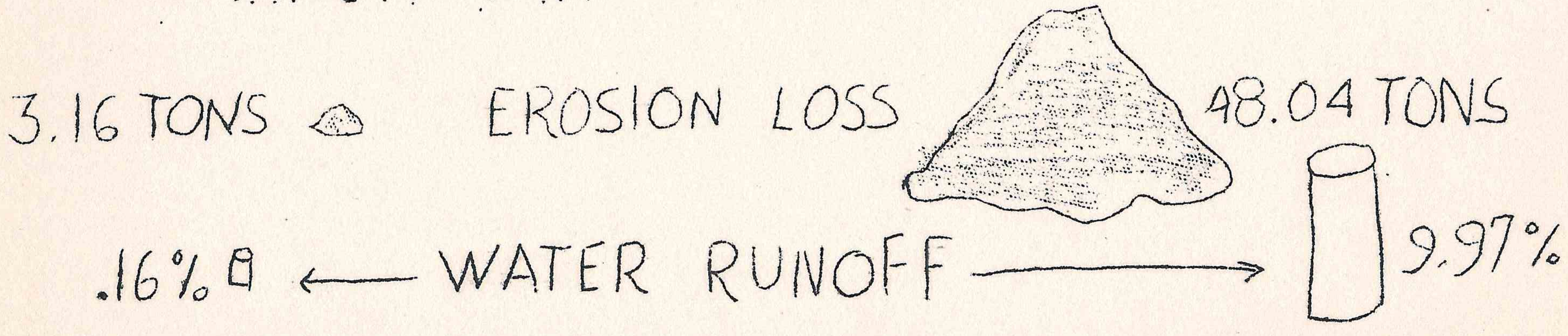
Grass waterways is similar, in a way, to strip farming. In this method we find that a gully can be widened with gently sloping sides and planted to grass. Water falling from the sky seeks its own level and must have an outlet down a slope. If it goes through grass, its speed is slowed and it doesn't wash. Excess water does no harm to soil when it travels a grass water way. When the ground on either side is cultivated, farm machinery as plows, disks, drills, etc. should be lifted out of the ground so the grass water way will not be damaged.

Permanent pastures is another conservation practice which prevents soil erosion. If the slopes are in pastures, especially good pastures, the water falling on them soaks into the ground and doesn't run off. What surplus there is from a heavy rain runs off slowly so no damage is done. Care must be exercised to see that the fer-ttility of the soil is kept up. It must have manures and top dress-ing of fertilizer to ensure a good pasture. Likewise it should not be overstocked, resulting in overgrazing and permanent injury to the pasture. When it is overgrazed and the grasses are eaten to the roots, little cover is left to protect the soil from erosion. This results in formation of gullies. If the land is pastured too early in the spring, much damage is done to the pasture by the trampling of the young grasses into the soil. Good pastures are needed in Perry County.

Contour plowing and planting is one of the newer practices of soil conservation in Perry County. The Chinese have practiced it for centuries on their sloping mountain sides.

CONTOUR FARMING HELPS TO HOLD SOIL AND WATER





By Contour plowing and planting we mean plowing and planting on the level. Instead of straight rows we find rows that are all at the same elevation. As a result the water in going down the slope must cross at right angles the cultivated fields. The corn ridges and corn and wheat growing serve as a check. As a result there is little soil erosion. This method of soil conservation is just now being used to save soil. A few farmers in Perry County have begun to practice it. One of the most difficult things to do is to mark off the contours. A level and a man who understands its use are necessary. However, in the new soil conservation district which has been established, there will be an agent who can help the farmers establish their contours.

Terracing can be worked in with contouring. This is the establishment of level strips of land perpendicular to the slope of the field. It slows the movement of the water, allowing it to soak in. Often these terraces are planted to a hay crop which aids still more the slowing of the surface water.

Dams are another means of soil conservation. The lower end of a gully can be dammed to stop the water and allow the sediment to settle. In this way the gully can be partially filled. Also dams are used in the construction of ponds. One or more good ponds should be on every farm. More will be said about damss in discussing conservation of water.

CHAPTER III

Conservation of Water

Water conservation is closely associated with soil conservation since water uncontrolled is the main cause of soil erosion. Without water mankind could not live and crops could not grow. But the distribution of water from the clouds is not uniform. Certain seasons find more rainfall than others. During these seasons the rainfall must be stored for use of crops in the growing seasons.

There are two principal types of reservoirs; one artificial, the other natural. The artificial one is the large dams and reservoir of the west, where water is stored for use of crops by means of irrigation. We in Illinois and Perry County are not concerned with this practice. The other type is natures reservoir, the soil. Water soaks into the ground to be used by the plants through capillary action. The type of soil and its slope has a great deal to do with the amount of moisture absorbed.

If the slope is steep, much of the rainfall runs off. Good soil conservation practices attempt to slow up this run-off so it will soak into the soil.

Open, porous soils and soils which contain a lot of organic matter absorb much more water than heavy clay soils. It is desirable that the surplus water sink into the soil but leave enough of capillary moisture to hold the crops.

Because of the increased run-off of water we find that the water table in Illinois is much lower than it once was.

Trees have been cleared off the land, slopes have been plowed and pastures have been heavily grazed. Add to this the surface water from a large city concentrated in one stream and you have the cause of floods.

At one time over one-half of the water which fell went into the ground. Today only a small part goes into the ground. After a period of unusually heavy rainfall over a large area, the water collects into the larger streams. They are not able to carry so much at a time and floods arise. The stream goes over its banks and floods the country side. Crops are destroyed. Horses are destroyed, stock is lost and often human lives are lost. In addition to all this loss often bottom lands are so silted that they cannot be used for another year.

The sediment and soil carried by the small stream tend to silt up the larger streams. When floods come, dikes are built along the bank to hold in the water. These must be built higher and higher each year. At Cairo, Illinois at flood time the river steamers travel on water which is higher than the houses. Only the levees keep out the river. When these break, as has happened along the Mississipp, the Ohio and the Illinois Rivers many times, great destruction ensues. This is happening in Illinois more frequently.

Huge sums of money are spent dredging river channels and drainage ditches. This would not be necessary if the waters were clear and free of silt. Every year the soil is being depleted and floods caused.

Large city reservoirs used for purposes of a water supply of a city are often destroyed because of silting. One example of this is Lake Decatur. It is so deep in silt that it cannot hold enough water for summer time use. The same may be said of other city lakes. When a lake is constructed, its water shed should be covered by grass or woods so little soil will be washed into the reservoir.

With the increase of population in Illinois has come an increase in industrial development. This has, meant the establishment of vast factories, many of which use large quantities of water. In turn this water is returned to the streams but in a polluted state. This causes destruction of fish and aquatic plants and animals. Also water borne diseases are spread as a result.

In order to conserve out water, we must keep the banks clear to prevent silting. We must use good soil conservation practices. We must not pollute our streams.

When a reservoir is constructed by using a dam, a spillway should be constructed in such a way that water will go over it before reaching the top of the dam. The spillway should be constructed of concrete so the water will not wash it deeper, emptying the pond or reservoir. Large dams may be constructed of earth if they are wide enough at the top. But they should be riprapped with rock in order to prevent cutting of the dam by the wave action of the water.

CHAPTER IV

Conservation of Oil and Mineral Resources

The Department of Mines and Minerals of the State of Illinois is the agency responsible for the enforcement of all laws relative to mining and operation of oil and gas wells. In making and enforcing these laws the conservation of human life must be considered, in that mining is dangerous.

Illinois has one of the largest and richest deposits of coal in the world. It produces from 12 to 14% of the World's annual supply. The largest producing shaft mine in the World is located at West Frankfort in Illinois. The largest producing commercial strip mine in the World is also located in Illinois, near Pinckneyville. In fact, two of the largest strip mines in the World, Pyramid Mine near Pinckneyville and United Electric Mine near Du Quoin, are located in Perry County. Each mine produces over 1,000,000 tons of coal each year.

Coal was first discovered on the North American continent near present Ottawa in LaSalle County, Illinois in 1669 by Father Hennepin. Joliet and Marquette and LaSalle all reported as seeing mines along the river bed.

Oil was first discovered in Illinois in 1865 in Clark County. Several new wells were opened up at various times but Illinois ranked low in oil produced until 1937. In that year a great find was made at Centralia in Marion County. This was later extended to the Salem field and Mattoon field. By 1940 Illinois ranked fourth in the 48 states in oil production, producing 1, 134,139,000 barrels of oil in 1941, about 10% of the World's production. It gradually dropped so that in 1944, Illinois ranked sixth. New fields are being explored. There are possibilities of oil in Perry County. Several wells have produced but none extensively. It is believed by many that oil futures in Perry County are bright.

Illinois also has a large number of minerals and mineral rocks of commercial value. One of these is limestone. Various sections of the state including Perry County have valuable deposits of limestone. It is crushed finely for agricultural lime to aid the farmers in soil building practices. It is used to a great extent in making road rock for our gravel farm-to-market roads.

It is used to make our system of concrete roads throughout the State, as it is one of the three main elements in the making of concrete, wherever it is used. It has many other uses. Leo Ritter, of Du Quoin, has a rock quarry in connection with his mine near Nine Mile Church. Also the County Commissioners of Perry County are operating a quarry near Jamestown in Perry County. Two large quarries in Illinois are the ones operated at Chester and Anna.

Some of the other rocks of Illinois which have commercial uses are: galena (lead); Fluorspar; feldspar; Pyrite; Quartz; Sphalerite (zinc); Granite; Clay (brick); Sandstone (glass).

Thus we see that coal and oil are the two principal products. Associated with the production of oil is that of natural gas. As one goes through the oil fields of Southern and Central Illinois at night, he notices the large number of fires. These are the natural gases which are being burned to prevent an explosion. But it is a waste, as much so as when our forefather burned the trees to clear the land. This gas, useful for heating, cooking, and lighting, should be conserved.

The large increase in the number of automobiles, trucks, airplanes, farm tractors and other gasoline and diesel engines has brought about a great demand for oil. This in turn has brought a problem of transportation since much of the oil of the U. S. was produced in the Southwest and Middlewest while the concentration of population was in the East. The construction of the Big Inch and Little Inch pipelines relieved this situation somewhat. But we have now reached the place where more oil and its products are being used than can be produced. The supply is definitely limited. As a result mankind has begun to think of oil conservation. One of our major oil companies has stated the following: "Waste prevention is a major aim of the oil industry today. The biggest topic of discussion in the oil states today is conservation. Oil is a prime need of our civilization; it must be kept flowing. Yet petroleum, like other minerals, does not replace itself. There is only one crop". Whereas conservation of such a national asset as our forests means replanting, conservation of oil means getting as much as possible from the pool".

When the oil industry was in its infancy, certain laws of mankind worked against conservation. Because mankind did not know oil was produced or the manner in which it was stored, he believed that there were vast pools of oil below the surface. The laws were established that the oil belonged to the man on whose land the oil well was. They did not know that a producing well drained the oil from other men's properties. As a result wells were drilled closely together to get the most oil. A man had to drill a well to protect the oil below his property. Such methods produced only 10% to 30% of the possible oil. The rest is lost, still stored in the ground.

Oil and gas or oil and water are stored together underground. If all the oil is allowed to come in a gusher, then the gas comes with it. When the gas has escaped there is nothing to force the oil to the surface. Hence, the rest of it is still in the ground and unrecoverable. The same holds true of a water-oil well. When the water has expanded to its limit there is no remedy.

But the past 15 years have shown methods of conservation in the oil industry which have increased our oil supply. From a 10% - 30% oil recoverable program, it is now possible to recover from 65% to 80% of the total oil in the pool. The oil is taken out gradually so as not to lose the expanding of the gas or water. Then gas and water are pumped back into the pool to keep up the constant pressure and recover more oil. It has been said that "more oil has been found in the laboratory than by the drill". By this is meant that the laboratory developed techniques of the oil industry have more than doubled the oil production.

When one thinks of the industries using oil for power and the thousand or more products made wholly or partially from petroleum, he realizes that a supply is necessary. But when he reads on good authority, that the United States has proved oil reserves to last 12 to 15 years at current rate of use and gas to last 35 to 50 years, he begins to think about conserving our oil supply.

The courts have reacted to the known method of oil pools and laws have been passed limiting the number of wells. In some areas it is one to 20 acres, in some, it is one to 40 acres, while other states allow only one to 80 acres. In such areas all the land owners in the pool share rather than the man on whose land the well is drilled.

Conservation of oil and gas must be carried on, as when the supply is gone, it cannot be replaced. But we can conserve and not waste the gasoline and other products each one of us uses.

Conservation of coal is another problem. The state of Illinois is supposed to have the largest deposit of coal in the United States. Although we mine over 80,000,000 tons of coal annually, we have enough to last at that rate over 2500 years. Coal, like oil, is not replaceable. When it is gone, it is gone. The more conservative methods of mining we can use, the longer our supply will last. To this must be added the fact that the chemical industry is discovering new uses for coal, such as rayon, dyes, oils, etc. This will increase the demand for more coal.

Not all of the total deposits of coal are recoverable. Some of it is so deep that mining is too expensive. Some of the coal is too deep for strip mining but the vein is too shallow or has too poor a top or overburden for shaft mining.

In the older days much of the coal was left as pillars to support the ground above. Today these pillars of coal are replaced by concrete or wooden pillars. In this way more coal is recovered.

A new method of mining, called strip mining, has been developed. Huge shovels strip the dirt and rock off the coal. Then all the coal is recovered. But this method, although conserving coal by getting out all the coal, destroyed the soil. Large areas in Perry County have been left desolate with the land lyiing in vast ridges, unfit for farming. Thus the solving of one problem in mining has created another problem, the problem of soil conservation.

CHAPTER V

Conservation of Forests and Woodlots

Forests and woodlots serve a multiple purpose and consideration must be given them in various phases of conservation. We have already noted their use is soil conservation and water conservation. Let us now consider them as trees and wood products.

Illinois has had a lot of various kinds of trees growing at various stages of its past history. When the early settlers came into Illinois they settled in the southern part and along the western side where there were trees. To the early settlers trees meant a living. They provided homes, furniture, machinery, food and industry. So they were unwilling to go into the prairies where nothing but grass grew. Originally over fifteen and one quarter of a million acres of the State of Illinois were in trees. This was 42.5% of the area of the State. All along the rivers of the north, the western side and the entire south were covered with trees. They ranged from cypress of the south to the larch swamps of the north. Much of this was find hardwood.

Today the picture is changed. There are only about 3½ million acres still in trees or about 10% of the State. One half of this acreage is in the southern one-third of the State. It is this part that we must conserve.

Wood is a natural resource. It is the only natural resource that is replaceable. Coal, oil, lime rock, soil, and iron ore are gone forever when they are gone. Trees can be grown as long as we maintain the soil. Wood can be used in place of coal. Wood products might replace oil, wood can be made as strong as steel. But the demand would be so great that the supply could not be met. It takes too long to grow trees to increase the demand. Today forests are being depleted at a greater rate than they are growing. The interests of all people must be aroused.

Why is wood so important? Because of its many uses. Lumber is still the greatest use for wood. Most houses are built wholly or partially of wood. The housing program is making a great demand on our timber. If we can construct our houses in such a way as to use less lumber in them, that will help conserve our forests. Furniture is made of wood. We do have some metal furniture but only real wood takes the polish we demand in our furniture. Much wood formerly was used to heat our houses but that use is being supplanted by coal and gas.

This helps to conserve our wood. Crating for machinery, furniture, canned goods, etc., calls for much wood. This is especially true of products shipped abroad. Paper products, including cardboard, use a large amount of wood pulp. This demand has steadily increased in the past few years. Add to these the many new uses of wood and you can see why we need forests. Many of our planes and automobiles will be built of veneered plywood. Plastics use wood as a source of raw material. Rayon is spun wood cellulose. An acre of pine trees can produce three times more cellulose than an acre of cotton.

One way in which we are conserving wood is in the way we use it. The log cabin in which Abraham Lincoln was born was 17 feet long, 12 feet wide, and 14 feet to peak of roof. If Abe's father had used lumber instead of logs, he could have built four houses the same size, without using any more wood.

In 1900 only 34%, about one-third, of a tree, was used to make lumber. The rest was left to rot or be burned. New processes now make it possible to utilize almost the entire tree. In this manner we use more wood without cutting more trees.

Dangers to our Woods

In addition to the fact that methods of logging in the past have been destructive of our timber resources, there are other dangers to our woods.

The greatest destructive force of all is fire. To this might be added fungous growth, borers, diseases of various types, and grazing. Old age takes its toll as trees, like human beings, die of old age.

Fire destroys more forest growth and keeps more young trees from growing than any other force. In most years more trees, both large and small, are destroyed by fire than are harvested. If we consider what these things could have been manufactured into in the shape of houses, barns, paper, etc, the loss is enormous.

In some years fire has burned over an area ten times the size of the State of Massachussetts and destroyed property worth 90 million dollars. Add to this the loss to the men who rely on the forests for their work and their wages, the loss will run as high as 200 million dollars in a single year.

How do these forest fires begin? Careless smokers, people who toss lighted cigarettes out of car windows as they pass along the highway or who drop them in the dry leaves in the woods--account for 25.5% of the fires. This is especially true in the fall when the leaves are dry and the hunters are so numerous.

The second list of fire starters are the fire bugs. These are the ones who deliberately set fire to the woods. This group accounts for 24.8% of forest fires. Often a farmer resorts to fire to destroy weeds in a field and the fire gets out of control and moves into a woods.

Careless debris burning accounts for 13.6% for forest fires. People burn trash or logs or brush and go off and leave it.

Lightning accounts for 9.1% of forest fires. Often a dead tree is struck by lightning and a fire starts. The burning branches fall to the ground and another forest fire has been started.

Campers in woods and fields account for 6.6% of forest fires. They fail to take the proper precautions to make sure that their campfires are out before they leave.

All other causes account for 20.4% of forest fires. If we can prevent one forest fire we will have done an immeasurable amount of good.

The Federal Government, as well as the Government of the State of Illinois, is doing what it can to prevent and control forest fires. In all our national forest we find forest rangers and ranger stations. Men are equipped with lookout towers and instruments whereby a forest fire may be located. Then other men move immediately to the area to fight the fire before it becomes large. Rangers also make talks, show pictures, and conduct educational campagins to get the people to prevent fires. Nine-tenths of all fires are man-made. The State of Illinois has a division of forestry in the conservation department. In certain areas are located fire towers which serve as lookout stations. One of these is located in Perry County near Oak Grove Church, just north of Pinckneyville.

Another enemy of forests is insects. The woodsman must wage war constantly against them. The airplane is brought in to help combat them. Large forests are sprayed from planes as that is the only way that spray can be applied. Foresters try to prevent the spread of insects from one area to another. The Natural History Survey tries to find methods of control to combat not only insects of forests, but also forest diseases.

A third enemy is also an enemy of nature. This enemy is the diseases which attack our trees. Often we find one particular kind of tree dying because of a disease, as has happened to many of our elms and hickories. It is the work of scientists to discover the cause and the cure for the diseases.

All in all, the damage caused by fire, insects, and disease causes a loss of two million cubic feet of wood each year. This is three times the amount used in the production of pulpwood. We can each help to prevent some of this loss.

Who Owns Our Forests?

According to government figures there are 461,897,000 acres in our commercial forest. Of this amount the government (Federal, State, and Municipal) owns 26%. Farmers own 30%. Small industry--those with less than 5,000 acres each own 29%. Large industry--those with holdings of more than 5,000 acres each, own the rest, 15%.

The fact that the farmers are the largest holders means that a problem of education must be carried on. In these holdings we find many adult trees which should be cut. Also many of these woods are being grazed, destroying the young growth.

Both small and large industries own large acreages of trees. Many of these are saw mills, furniture manufacturers, automobile industries, railroads etc, which use a large amount of wood and wood products. In order that these industries may continue, they grow their own. These industries realize that trees are crops and can be grown as any other crop. The only difference is in the time the crop takes to mature. In the management of these tree farms they practice the latest methods of tree management. They are doing an excellent job.

They let nature do most of the work by providing ideal conditions. If there is a source of seed, nature will reseed any area. So a few large trees must be left to reseed when any area is logged over. These should be left preferably on a high slope in order that the wind can carry the seeds downward.

The second step necessary is that fire be kept out. In a few minutes a fire can destroy over a large area the five or six year old growth which has been reseeded by nature. Fire fighting equipment is kept on hand. Also the industry must fight insect and diseases to keep them out, as farmers fight the insects and diseases of their annual crops. If the area has been burned over repeatedly, it may be necessary to reseed by hand. This is rather expensive but necessary. This is especially true in Illinois in those areas which should be in trees to preserve the soil. The cost of seeding ranges from $6.00 to $12.00 per acre.

The State of Illinois had two nurseries, one located at Jonesboro and one at Havana, Illinois. These have produced 45 million seedlings and could produce as many as 20 million a year. The cost of these trees at 16-18 inches high is about $5.00 per 1,000. The strip mines have bought millions of these trees to plant on their slopes. Many acres in Perry County should be planted to trees. One of the great drawbacks to this is the fact that the land is considered the same as tillable land and taxed accordingly.

Many woodlots in Perry County could grow more trees. But many farmers use their woodlots for pasture. They make very poor pasture as there is not enough grass. The stock eat and trample the young seedlings so that nature does not have a chance to restock it. But that is the individual problem of the farmer.

In addition to the nurseries, Illinois has three forests. One is in Union County; another is in Henderson County; and a third in Mason County. The University of Illinois many years ago set out a model forest. This gave impetus to forest planting in Central Illinois.

The State of Illinois allows a County to form its own forest preserve. There are eight counties which have their own district. Cook County, with 37,000 acres, has the largest area. Eighty per cent of this is wild, sixty per cent of it being forested. The United States National Government has established the Shawnee National Forest in Southern Illinois. This district comprises over 200,000 acres. Constant replanting is being carried on.

Practically any North American tree will grow somewhere in Illinois. In the original forests of Illinois were to be found 124 native tree species and 15 naturalized species. In some areas are to be found only certain kinds. Perry County has a large number, over sixty varities being found within its borders.

According to the University of Illinois, in order to make farm woodland a profitable part of the farmer, the owner must observe the following rules:

1. Protect woods from fire and grazing of livestock.
2. Cut out diseased and undersirable trees.
3. Cut mature trees for the product to which they are best suited.
4. Utilize all the material in each tree.
5. Sell high-grade logs direct to the consumer and use the lower grades for farm lumber.

CHAPTER VI

Conservation of Fish and Wildlife

Fish and Wildlife must be conserved or we will eliminate them.

When this country was visited by man many years ago, large game abounded. Streams and lakes were full of fish of various type. Some of the animals existing in early Illinois were: moose, elk buffalo, fisher, marten, wolverine, lynx, wolf, badger, bobcat, coyote, puma, bear, deer, muskrat, mink, raccoon, skunk, rabbit. Many of the largest of these are extinct in Illinois today.

This is due to various reasons, the principal one being a change of habitat. The bear, lynx, puma, and bobcat all inhabit a wilderness-like region. When mankind settled Illinois and began to clear the woods, the animals fled to unsettled regions. Also all of these animals had furs which were valuable. Many fur traders and trappers frequented Illinois in its early history, catching the animals for their furs. Large numbers of furs were shipped down the Mississippi River.

The fur trade in Illinois today is still an important industry. In 1938-39 the value was about $30,000,000. One seventh of all rural people of the State of Illinois received some resource from furs. Much of this is taken at the slack season for farmers. The furs taken in Illinois today are mainly the muskrat, mink, raccoon, opposum, fox, weasel and skunk.

Game farms for the propagation of fur animals are increasing in Illinois. Plants and animals form a part of the renewable natural resources of our state and nation. Nearly all the common wild animals of Illinois can be reared in captivity.

The Department of Conservation, through its game laws, is trying to increase wild life in our state and county. Before this can be successful, more habitat suitable for wild life must be available. Many of our smaller animals feed on grass, bark, insects and birds. But if there is no suitable place for the rearing of young, the species dies out. Foxes feed mainly on rabbits, mice and other small animals. If rabbits are not plentiful the foxes will leave or take to feeding on chickens from the farm.

When nature was left alone without mankind, she was in balance as far as plants and wild life was concerned. But the coming of man upset the balance. The destruction of four-fifths of our timber land meant the destroying of the habitat of many of our wild life. Mankind and wildlife cannot all live together.

The game laws of Illinois provide an open season for part of the year with a limit as to the number taken in any day on certain animals. Some animals have a closed season the year round. A few animals have an open season the year round. No one can hunt or trap without a license. There are exceptions. A bonafide resident of an area can hunt on the land on which he lives and needs no license but he is bound by the other game laws as far as season and limit of take is concerned. A few extracts from the law of 1947 are:

Deer---Closed season all year, no hunting.
Rabbits---Open season, November 11 to January 31 inclusive. Limit 15 each day. Total of 30 in possessions after first day.
Squirrels---Open season, July 15 to October 15 inclusive in Southern district (including Perry County). Limit 5 each day, total of 10 in possession after first day.
Foxes---Open season, Northern and Central zone all year. Southern zone November 15 to January 15.
Beaver, badger, others---No open season.
Opposum, skunk, muskrat---Open season November 15 to January 15 inclusive.

A great many other regulations are to be found in the code book. A person needs a special kind of license to take fur-bearing animals.

By means of these regulations the Department of Conservation hopes to increase the number of species of wild game in Illinois. The introduction of strip mines in Illinois has created a peculiar situation. The spoils piles, vast ridges of earth, are overgrown with trees and vines. The large amount of rock makes an ideal habitat for foxes. The number of foxes in Perry County has increased a great deal in the last ten years. Other wildlife has increased also.

BIRD LIFE

Bird life in Illinois is somewhat akin to animal life. People get a great deal of enjoyment out of watching birds, noting their plumage, and listening to their songs. There are over 1420 different kinds of birds but only a few in any locality. A person will rarely see more than 160-210 different kinds of birds in a season.

A few birds, once numerous, are extremely rare today. Some no longer exist. Among this latter group are: Great Auk, Labrador Duck, Passenger Pigeon, California Paraket, Eskimo Curleu, Cape Sable Seaside Sparrow, and the Heath Hen. There are only two ivory-billed woodpeckers left. About 25 whooping crane still exist in Texas. The California Condor, a large bird, number from 60-80. They produce only one young a year. There are about 1000 Trumpeter Swam in Yellowstone National Park.

Birds are divided into various classes. We have common birds, as robin, crow, lark. We have game birds, as pheasant, quail. We have migratary birds, as duck, goose. We have birds of prey, as eagle, hawk. Birds might also be classed as song birds, forest birds, field birds, sea birds, etc.

Unless a person is skilled in identifying birds he will not get much enjoyment as he would otherwise. There are four important clues to the identification of birds.

1. Color--Male and female generally differ. The male is the brighter color to attract his mate. Her dull color helps to conceal her on her nest.
2. Outline and Movement--Notice how the bird moves about. Notice its flight, as chimney sweep, kildeer, hawk.
3. Habitat and Association--Certain kinds in certain areas, as kingfisher over streams, larks in meadows. Screech owl at night.
4. Song--Birds have certain types of song at different time. Can identify birds if you know their song. Some birds imitate other birds. This is one of the best clues to identify a bird.

Other means of identifying birds are by the bill and feet. Some have large pointed bills, others are blunt. Some are hooked. Some birds have webless feet, others have complete web; while some arepartially webbed.

In order to have birds around your home they must be protected. Cats must be eliminated. They are death for young birds learning to fly. Putting up boxes will help to a certain extent.

A few birds fight other birds. The English Sparrow introduced in 1850 is now all over the U. S. The starling, introduced in 1890 to eat the Japanese beetle, is now so numerous it is a pest. It choses out woodpeckers and blue birds. The blue jay also destroys the eggs and young of the robin.

Only a few birds, besides our game and migratory birds, have been used for food. Some people use the dove, pigeon, sparrow, blackbird and crow for food. All song and insectivorous birds, except most of those just named above, are protected by law. Boys and girls should learn to prevent killing of birds or robbing of their nests. They should interest other boys and girls in bird study and appreciation.

GAME BIRDS

In Illinois upland game birds include the following: Pheasant, bobwhite quail, ruffed grouse, prairie chicken, and chukor or Hungarian partridge. These birds are protected by law. Only the first two can be taken and then only during a short season. The Department of Conservation is trying, by every means, to increase the number of these birds. When mankind first came to Illinois quail and pheasants increased. They were most numerous 1860-1900. Since 1900 the number has decreased, mainly due to the fact that the habitat has changed. Fields were plowed, open woods were cleared, fence rows were cleaned up. Their nesting places were gone. The osage orange hedge rows made ideal runways for quail and pheasants. Most of these have been destroyed and wire fences put in their place.

The pheasant is an interesting bird. The hen pheasant lays about 12 eggs in a nest in the months of May or June. Sweet clover makes a good nesting cover. The eggs hatch in about 23 days. The young pheasants resemble young turkey. If they are being raised on a farm they will run with a chicken hen. One wing must be clipped or they will fly away. They can fly at two weeks old. Pheasants have diseases similar to chickens. They are guilty of cannabilism. They stay in a brood all summer and winter. In the spring they break up. One cock pheasant will take 5 or 6 hen pheasants and establish himself a harem.

During the winter the pheasants need shelter and food. They eat waste corn in the fields and weed seeds. If there is no food they die. It is not permissable to kill hen pheasants. Cock pheasants may be killed for a short two weeks period in November.

There are few sights prettier than that of a cock pheasant flying through the air with his brilliant plumage and his long flowing tail trailing behind. There are few sounds more peculiar than the booming of the cock pheasants in the mating season.

The bobwhite quail is also very interesting. The quail is often seen in a covey. The mother quail lays her eggs in a nest on the ground, often in an oatfield. This isn't good because in the southern section of Illinois oats are cut before the eggs hatch and the young birds are destroyed. There are from 16 to 24 eggs in a nest. Twenty-three to twenty-four days are required for incubation. The quail eggs are as uniform as fingerprints. They leave a hinge on the shell when they come out. The little chicks are very wild, even when hatched in incubators. They mature in fourteen to sixteen weeks.

The Department of Conservation maintains several game farms. These are located at Mt. Vernon, Springfield, Yorkville and Alton. Quail are hatched at the first two. In 1946 more than 43,000 quail were liberated to Sportsmen's Clubs for restocking areas. The same holds true regarding pheasants. Eighteen hundred pair of bobwhite quail are kept as breeding stock. The department also maintains several public hunting and fishing grounds. One of these is the Chain-O-Lakes public pheasant hunting area. Here cock pheasants are released each night so there will be a supply on hand. Only a certain number of hunters can hunt. When the limit is obtained they must cease.

But the number of quail and pheasants will not increase to a great extent until we have an increase in the amount of available shelter for the birds and their nests and for winter feed. That is the most important problem to solve as far as conservation is concerned. The wild rose makes an excellent shelter and runway.

MIGRATORY FOWL

A state has jurisdiction over its birds, game, and fish only as long as they remain within the state, under its jurisdiction. Since migratory fowel travel thousands of miles in the course of a year, it is necessary that the Federal Government regulate, that laws might be uniform.

There are six basic game laws regarding this matter. The first of these is the Lacey Act of 1900. This act states that a state loses control of game after it loses jurisdiction. The Federal Government aids states to enforce laws regarding birds shipped to other states. It also inspects raw furs taken. It issues permits to bring in animals and birds from other countries. All of their laws are under the control of the Fish and Wildlife Service of the United States. It is an agency of the Federal Government.

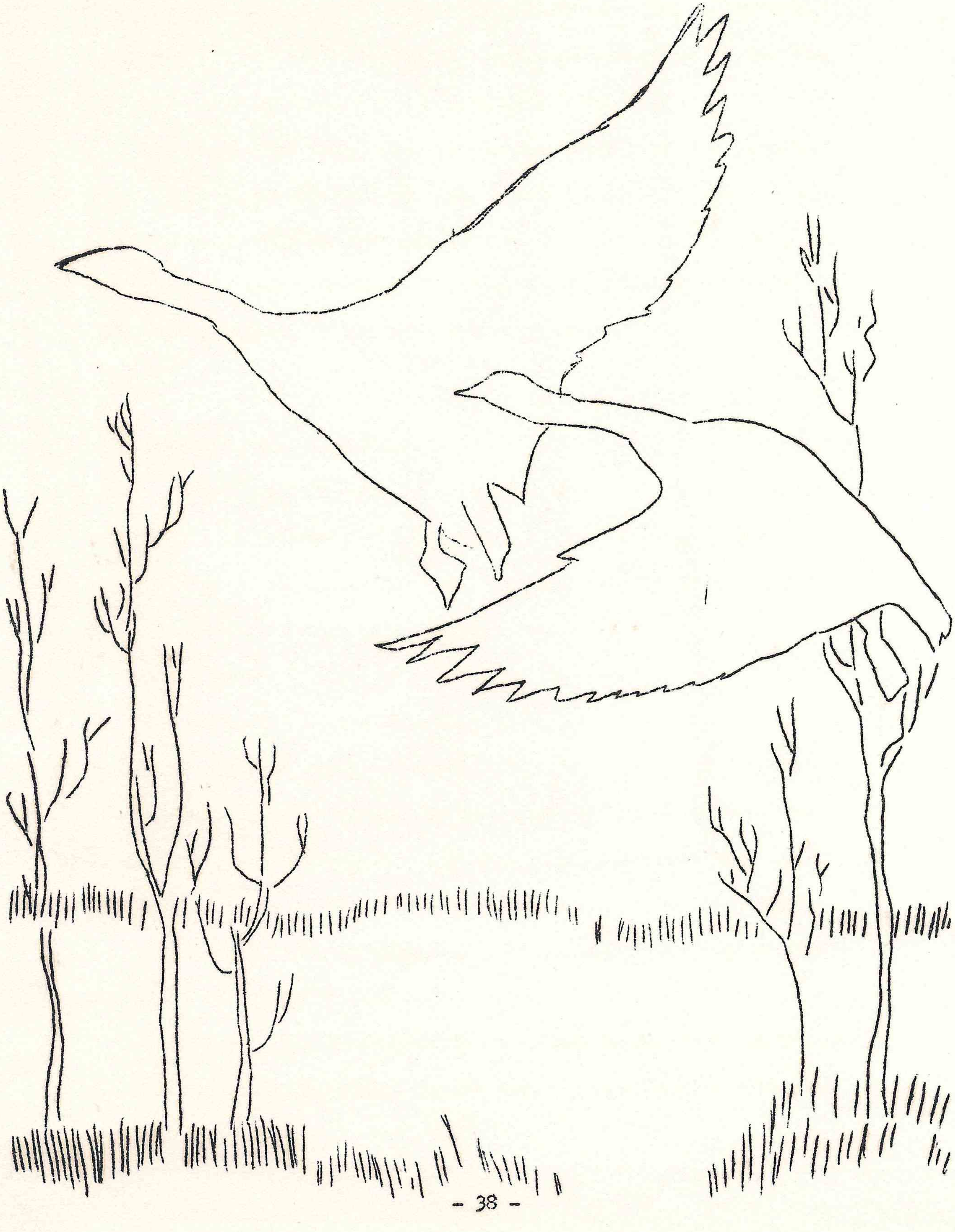
The second of these laws is the migratory bird Treaty Act of 1918. This is an act to cooperate with England and Mexico in regard to birds which migrate from one country to another. This includes ducks, geese, coots, doves, etc. Each year regulations are made. These include dates of killing, methods, number etc.

The third of these laws is the Black Bass Law of 1926. This prohibits interstate shipment of black bass taken illegally in other states. The fourth law is the Migratory Bird Conservation Act of 1929. This law provides for the establishing and regulating of bird refuge stations in the U. S. Some of these are for nesting areas. Otheres are for feeding and resting areas. Still other regions are for winter quarters where they can live unmolested.

The fifth law is the Migratory Bird Hunting Stamp Act. This is sometimes referred to as a "Duck" stamp. This act provides that no one can hunt or killa migratory water fowl without a stamp. They are sold at all post offices at $1.00 each. All hunters over 16 need one. This is an effort to make the hunter pay for part of the expense.

The last law is the Bald Eagle Act of 1940. This act provides complete protection to bald eagles in the U. S.

This agency has 70 United States agents to see that these laws are carried out. The number is too small as the territory of each



is too large. There are two who cover the states of Illinois and Iowa combined.

In regard to migratory birds we find there are certain areas of the United States which serve as "flyways". These have been designated as Pacific, Central, Mississippi Valley and Atlantic. The Mississippi flyway is by far the most important. The ducks and geese spend the summer in Alaska and Canada where they make their nest. We are finding more and more of them nesting in Illinois at some of our resting stations. The number of ducks and geese vary from year to year because of various reasons. The nesting season may be bad. Floods and predatory animals may destroy them. Also diseases often break out if the birds are too concentrated in a breeding area.

At Horseshoe Lake and Crab Orchard Lake in Southern Illinois are game preserves for migratory fowls. Large areas are planted to grain to be left for the ducks and geese. Large numbers of these are to be found at various seasons of the year.

FISHES

The streams and lakes of Illinois as well as the three rivers bordering the state provide a large amount of fish. In ages ago before the coming of mankind fish were more abundant. Food was plentiful and the streams were clear and pure. Too often today many streams and lakes are so polluted as to cause the death of fish in them.

The State of Illinois through its Conservation Department and Natural Survey is trying to improve fishing in Illinois. Studies are made to find out the type of food certain fish eat. The length of life, the rate of growth, the number of eggs, the food and various other features are studied.

The State of Illinois maintains six fish hatcheries for the purpose of hatching fish. One of these is located at Carlyle about 40 miles north of Pinckneyville. The State's men also rescue fish from lakes or streams going dry. During 1946, an actual count revealed that 6,410,483 fish were taken from the hatchery or rescued by the state and taken to lakes and ponds.

Although many streams of Illinois are open sewers, causing fish to leave, we have over 900 miles of streams with catchable fish in them. There are 352 natural lakes and 390 artificial lakes. In addition to this, the state legislature appropriated $3,000,000 to start a system of county lakes. Ultimately they hope to have one in every county. These will be used for fishing, boating, swimming and other forms of recreation. Jackson County is to have one in the near future.

KINDS OF FISH

There are various kinds of fish in Illinois waters, some good, some bad. There are very few trout in Illinois outside of Lake Michigan.

The eel is a queer fish but the one in our Illinois streams is a true fish. It eats anything but prefers fish. Many people eat it The young are hatched in the ocean but find their way back to our own streams, hundreds of miles away.

The paddle fish has a bill like a paddle or spoon bill catfish. It may reach 100 pounds in weight. It doesn't spawn until it is about 40 pounds in weight. It has scales only on its tail. Its gill opening is peculiar. It is a large mouth fish, but strictly a vegetarian. Its eggs are sold as caviar.

The sturgeon is a large fish sold in the market, mostly as smoked sturgeon. The number is declining. There are different kinds, sand sturgeon, white sturgeon and the rock sturgeon. They weigh 3 to 4 pounds mainly. They feed on plants and insects. Their eggs also are used as caviar.

The Gar---short nosed gar, spotted gar, long-nosed gar and alligator gar, all belong to the same family of fish. They have sharp teeth with a plate scale covering. The gar have no commercial value but are great preditors. They eat lots of small fish and fish eggs.

The dog-fish is a peculiar fish. Its bones are part bone and part cartilage. Some people eat them but they have no commercial value. The head is not covered with scales but their teeth are very sharp. A peculiarity of the dog-fish is that the young have a suction disk and fasten themselves to rocks. The number is increasing but they act as preditors.

The moon-eyed fish has a large mouth. It is not very abundant in the rivers. It is used in some areas as smoked moon-eyed.

The gizzard shad is not a commercial fish but used as forage. It is very abundant in the backwaters of the Mississippi River. It belongs to the herring and sardine family.

Fish of the sucker family have large, round mouths capable of sucking. They are all bottom feeders. There are three distinct members of the buffalo, which belongs to the sucker family. These are red mouth, black mouth, and small mouth. They rank second to carp in value as a commercial fish.

The carp belongs to the minnow family. It is a large commercial fish. When large it is good eating, but when small it is very bony. It is one of the least expensive fish.

The catfish family is one of the largest type of fish. It is one of the most easily recognized fish because of its armed barbs. Be careful of these, even after the fish is dead. The fish is tender and savory with no small bones. It is one of the best eating fish of all.

There are several varieties of catfish. The blue cast or Fulton Cat and the yellow cat or mud cat often grow to weigh 100 pounds or better. Some, like the tadpole cat, grow no longer than two inches. There are 4 species of bull heads: Black, speckled, yellow and brown. These are found mainly in small streams. The cat fish will eat most anyting, dead or alive. They are a scavenger fish. The Spoonbill Cat has a large bill like a duck. It has no bones, its backbone being a cartilage. It is good eating and is found in the Mississippi and other rivers of the State.

The Northern Pike belongs to the same family as the pickerel and muskalong. It is often called a mountain trout. It has a sharp nose. The wall-eyed pike has a black spot on its dorsal fin.

The salger is small. It is called a Jack Salmon, commercially but belongs to the perch family. It is good eating. The yellow perch belongs to the same family.

The drum or sheep head is a good eating fish. It has a hump back and large jaws. It feeds mainly on muscles and small fish. It may grow to weigh 40 or 50 pounds. It is called a white or yellow perch.

The bass, both large mouth and small mouth belong to the sun fish family. This is the sport fish of the country. Men will cast for hours to get a bass to rise to a fly. The bass is a predator fish, devouring many other fish including its own young. They will often try to swallow another bass almost as large as themselves. The bass is a good eating fish.

The blue gill, a pan fish, belongs to the same family. Often a 6 inch blue gill will put up a good fisht on the end of a line. The blue gill populates very rapidly unless bass is present to eat part of them. If not, the blue gill grows slowly and remains stunted.

The white and yellow bass belongs to the sea bass family. The white bass has interrupted lines on its sides; the yellow bass has uninterrupted lines.

CHAPTER VII

Conservation of Human Resources

In order for humanity to be conserved, it is necessary that all other resources be conserved. Without their conservation, humanity cannot be conserved.

War is the greatest destroyer of humanity as well as the greatest destroyer of all other resources. We used much soil to grow food to feed our armies as well as the people of Europe. We drained many soils of the minerals. Land was misused in order to produce.

We depleted our forests. Much wood was needed in war time. It was shipped out, never to be returned. Many new products, such as wooden airplanes and laminated wood torpedo boats were made.

Our minerals were used at a much faster rate. America was the only country not devastated by war. Her factories could run at top speed without interruption. But it was American iron ore and bauxite and other metals which were used to arm the world. These shipped abroad were never returned, even as scrap metal. The cost was too high.

We depleted our oil reserves in order to supply our forces with gasoline and oil.

All of these resources were used, not to be replaced. It was in human resources that mankind really destroyed. No one knows the millions of people who were killed or died of the effects of War. Thousands were deliberately murdered. In addition to these, many millions of European were subjected to so much malnutrition during the war that their future lives will be affected.

The death rate will be higher and the birth rate lower. The standard of living is so low that it is bare subsistence. How long this will continue, no one knows.

People will be the greatest conservator of human resources Europe can possibly have. But she will need help from the United States. But in turn, we need to be careful or, in helping Europe, we may deplete our own resources. We have many regions in America needing our help as much as do those of Europe.

In the South land, in the region where cotton was once king, the land is so depleted and denuded of good top soil that very poor crops grow. Men and women are trying to rear children in this area. Those children don't have half a chance in life. Abraham Lincoln's declaration that "all men are born free and equal" does not hold true for them. They suffer from malnutrition, diseases, ignorance and immorality. What kind of citizens can we expect from these? The statistics of the last war show that nearly half of the draftees in some southern states were rejected because of lack of education and physical fitness.

This same statement holds true in regard to certain parts of other sections of the United States. The State of Illinois is not to be excepted. In certain areas of Southern Illinois we find a similar situation. If good soil conservation practices had been used in this area for the past 75 years, the situation would be different. The area is practically past salvation now. This is one reason why the southern part of the state needs more state assistance in the matter of education.

In the slum area of our large cities and in the section "Across the track" in other cities we find situations needing conservation. The slum clearance program of the State of Illinois can do a great deal if it is properly administered. These people have an equal right and an equal vote in our democracy. We must give them an equal chance to become the right kind of citizens.

There are several classes of people who must be considered in conservation of human resources. There are the crippled and handicapped children, the mentally deficient, the incorrigible, the juvenile delinquent, the criminal.

The State of Illinois through the Department of Public Instruction, has as excellent program. This provides education for various classes of children, those physically, mentally, and socially handicapped. In addition the state has a number of schools for education and care of the blind, deaf and dumb, and feeble minded. These are taught to make themselves as self sufficient as possible. The State likewise maintains hospitals to care for the insane. They provide places of safe keeping for those who cannot abide by the laws of society. But much can be done to assist in the conservation of our boys and girls before they reach the point where they violate our laws and must be kept behind bars. We need some type of home where juvenile delinquents can be separated from their immoral and degrading environment and placed in an entirely new environment where good citizens can be made of them. The Department of Registration and Education is carrying on a vocational program for the rehabilitation of disabled people. This may include veterans.

FARMING

The farmer, in the past, has been the down-trodden man. Yet everything springs from the soil. If the farmers all failed and did not produce, all forms of human endeavor would have to end. So it is necessary that farming be appealingly enough and remuneratively enough to attract the best of our young men. Too often in the past farming has been a hit and miss proposition. We are reaping the rsults of that now in our plundered country, our depleted soil, our denuded forests. Today farming is a science, as much so as any other scientific project. The present day farmer should be an educated man.

How can we attract our best young men and women to the farm? The farm home should be attractive. Within and about the farm, the farmer and his family spend 90% of their time. The home should be such as will hold our young people. It must have a pleasant appearance, be well kept and attractively landscapped. A farm home can be made to stand out more readily than a city home. There should be a lawn with shade trees and a flower garden as well as a vegetable garden. These should be protected from chickens, pigs and other animals. It isn't necessary that the front yard be a dusting bowl for the chickens or that the front porch should provide their shade.

The farm home should have conveniences. It should have electric lights, modern sewerage and running water. How unattractive are many farm homes with kerosene lamps, water carried from a spring or a well a considerable distance away and the toilet located beyond the hen house. This situation is especially unattractive in the dead of winter.

Also the farmer's wife should have kitchen conveniences. In addition to running water she should have a sink, an electric refrigerator and some type of stove other than a wood burning stove. She needs gas or electric during the summer. An electric washer and iron will shorten her busy wash days. If the farmer is entitled to labor saving devices on the farm, his wife is entitled to them in the home.

No farm home should be complete without a telephone and radio. These are necessities for the farmer as well as his wife. It is true that all these necessities cost money. But the farmer who tills the soil, the source of our prosperity, is entitled to as high a standard of living as is the man who runs our trains, digs our coal, builds our houses or educates our children.

In addition to these conveniences, every farm should be located on or near a bus route leading to a consolidated school where the farmer's children can receive an education equal to that of his city cousin. When that time comes our best young people will stay on the farm instead of migrating to the city.

RECREATION

In addition to the uses to which our soil, water, forests and fish and wildlots may be used, there is another use which is tied in closely with human resources. This is recreation.

A machine wears out if used constantly. Human beings lose their punch and desires to advance if they work constantly. Not only that, but today in our system of seven and eight hour work day, mankind has plenty of leisure time on his hands. This is where recreation comes in.

Many industrial companies have provided hospital care for their employees. In addition, many provide recreation facilities. These range from ball diamonds to large parks with various facilities.

The State of Illinois maintains 29 state parks as well as various State Historical Parks. In these 29 state parks, ranging in size from a few acres to well over 1500 acres, Giant City Park, in Jackson and Union Counties, is one of the largest. Many of thes parks have been developed for recreation purposes. Some provide nature for hiking expeditions, flowers, shrubs and trees being well preserved in them. Others provide camping facilities, lodge quarters, boating, fishing, hunting, swimming and other forms of recreation. A few are stocked with deer.

These parks are scattered over various parts of the state so as to be as accessible to as many people as possible. Because of the nearness to Perry County of Giant City Park, school children of this county should visit it. Here are to be seen many features of nature seen only in the mountains.

Besides these parks the Federal Government owns Shawnee National Forests in Southern Illinois. Grab Orchard, the largest artificial lake in Illinois is federally owned and is located in Southern Illinois. These are both open to visitors for recreations.

Many cities maintain parks. Chicago has many parks within the city. In addition Cook County has a forest preserve of 37,000 acres. Seven other counties have similar preserves. The use of Cook County is for preservation of flora and fauna and for recreation. In the natural clearing picnic grounds have been established. Shelters and dance platforms have been erected. Because of the fact that people are vandals and destroy much of the wild flowers and plants among which they walk, educational tours are being provided for the children of Chicago schools to interest them in conservation.

If we maintain our heritage and transmit it to the next generation, we must be conservationists. We must practice what we preach and see that others do likewise.

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